

REMARKS

Claims 5-10 are pending in this Application. Applicant has amended claims 5-10 to define the claimed invention more particularly. Applicant has cancelled claims 1-4 and 11-20 without prejudice or disclaimer. No new matter is added.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-3, 5, 8, 11, 13, 16, and 19 stand rejected under 35 U.S.C. §102(b) as being anticipated by Ishida (US 2002/0073741). Claims 3, 4, 11-12, and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ishida in view of Nunome et al. (US 2003/0110811, and hereinafter "Nunome"). Claims 9 and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ishida in view of Hirano et al. (US 2003/0145630, and hereinafter "Hirano"). Claims 6, 14, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida and Nunome, in view of Japanese Abstract No. 2000-086265 ("Kudo"). Claims 7 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida in view of European Patent No. 1104891 ("Chang"). Claims 10 and 18 stand rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Ishida.

Applicant respectfully traverses these rejections in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined by exemplary claim 7) is directed to a method of manufacturing glass base material.

The method includes forming porous glass base material which includes a dopant added core part, and an inner clad layer surrounding the core part and having a lower refractive index than the core part, transforming the porous glass base material into clear glass to be provided as a core ingot, heating and elongating the core ingot in an axial direction in an electric furnace to make a core rod, and forming an outer clad layer

surrounding the core rod.

The transformed core ingot has an outer diameter of 70 mm or more, a ratio of an outer diameter of the core part d to an outer diameter of the inner clad layer D, or d/D , is smaller than 0.21. A glass tube is welded on the outer surface of the core rod elongated in the electric furnace.

The claimed method makes it possible for the transmission loss in the wavelength of around 1385 nm to be significantly decreased (e.g., see Embodiments 2 and 3 and Table 1 on pp. 6-8 of the Application).

II. THE PRIOR ART REJECTIONS

A. Rejections under 35 U.S.C. § 102

Claims 1-3, 5, 8, 11, 13, 16, and 19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ishida.

Applicant notes that claims 1-3, 11, 13, 16, and 19 have been cancelled by this Amendment, rendering the rejections of these claims moot. The remaining rejections, to the extent the Examiner considers them still applicable to claims 5 and 8, as amended, are traversed as explained below.

Further, claim 7 has been rewritten in independent form including all of the limitations of claims 1, 2, and 4, and claims 5 and 8 have been amended to depend from claim 7.

Moreover, Applicant submits that, as admitted by the Examiner on page 4 of the Office Action with reference to claim 7, Ishida does not teach a rod in tube method. For at least the reason that Ishida does not teach or suggest, *“a glass tube is welded on an outer surface of the core rod elongated in the electric furnace,”* as recited by claim 7. Thus, Ishida fails to teach or suggest claim 7.

Further, claims 5 and 8 are also not anticipated by Ishida at least by virtue of their dependence from claim 7.

Therefore, Applicant respectfully submits that Ishida fails to teach or suggest each element of Applicant's claimed invention. Therefore, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection.

B. Rejections under 35 U.S.C. § 103

Claims 3, 4, 11, 12, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida in view of Nunome. Claims 6, 14, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida and Nunome, in view of Kudo. Claims 7 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida in view of Chang. Claims 9 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishida in view of Hirano. Claims 10 and 18 stand rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Ishida.

Applicant respectfully submits that the references would not have been combined as alleged by the Examiner and that, even if combined, the alleged combination of references would not teach or suggest each and every feature of the claimed invention.

Applicant notes that claims 3, 4, 11, 12, 14, 15, and 17-20 have been cancelled by this Amendment, rendering the rejections of these claims moot. The remaining rejections, to the extent the Examiner considers them still applicable to claims 6, 7, 9, and 10, as amended, are respectfully traversed as explained below.

Applicant respectfully submits that these references are unrelated and would not have been combined as alleged by the Examiner. Thus, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Moreover, Applicant submits that there is no motivation or suggestion in the references (and thus no predictability for one of ordinary skill in the art) to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have combined the references as alleged by the Examiner.

Therefore, the Examiner has failed to make a prima facie case of obviousness.

Furthermore, Applicant submits that the alleged references either alone or in combination (*arguendo*) fail to teach or suggest, “*heating and elongating said core ingot in an axial direction in an electric furnace to make a core rod...wherein the transformed core ingot has an outer diameter of 70 mm or more, a ratio of an outer diameter of the core part d to an outer diameter of the inner clad layer D , or d/D , is smaller than 0.21,*” as recited in claim 7.

The combination of features in claim 7, including the above quoted features, makes it possible for the transmission loss in the wavelength of around 1385 nm to be significantly

decreased (e.g., see Embodiments 2 and 3 and Table 1 on pp. 6-8 of the Application).

Even assuming, *arguendo*, that the cited references individually teach each and every one of the claimed features, claim 7 would still be patentable because it would not have been obvious to one with ordinary skill in the art to combine the cited references. Specifically, as explained below, Chang teaches away from the “*electric furnace*,” as claimed, and the combination of features in claim 7 yields unexpected results.

That is, claim 7 recites, “*heating and elongating said core ingot in an axial direction in an electric furnace to make a core rod*” (emphasis added by Applicant).

However, paragraph [0025] of Chang discloses that “*the core rod is preferably elongated using an oxygen-hydrogen torch. This is the most cost-effective manner of supplying the large amount of heat needed for this step. Alternatively, this step is carried out using a hydrogen-free plasma torch, as discussed below, and advantageously eliminates the need for etching...*” Therefore, Chang teaches away from applying an “*electric furnace*,” as recited in claim 7.

Moreover, claim 7 further recites that “*the transformed core ingot has an outer diameter of 70 mm or more.*” Applicant points out that there is extreme technical difficulty in elongating a core ingot with a large diameter using an oxygen-hydrogen torch. For these reasons, it is unlikely that Chang and Ishida would have been combined to arrive at the claimed invention. Therefore, the combination of Ishida and Chang would not have been obvious to a person having ordinary skill in the art.

Further, MPEP § 2143.01(III) stated that, “*The mere fact that references can be combined or modified does not render the resultant combination obvious unless **>the results would have been predictable to one of ordinary skill in the art. KSR International Co. v. Teleflex Inc., 550 U.S. ___, ___, 82 USPQ2d 1385, 1396 (2007).*”

As mentioned above, the features as claimed in claim 7 provide the advantage that the transmission loss in the wavelength of around 1385 nm is decreased very much (e.g., see Embodiments 2 and 3 and Table 1 on pp. 6-8 of the Application). This is an unexpected result of the combination of claimed features. Evidence of the unexpected nature of this result can be found in a comparison between Embodiments 1 and 2 and the Comparative example as shown in Table 1 of the present Application. Further, Embodiment 2, which includes the claimed feature that “*a ratio of an outer diameter of the core part d to an outer diameter of the inner clad layer D , or d/D , is smaller than 0.21,*” has a transmission loss of

0.275 dB/km at a wavelength of 1385 nm, whereas Embodiment 1 and the Comparative example, which do not include the claimed limitation, have transmission losses of 0.355 and 0.38, respectively, which are significantly higher. Therefore, the combination of features in claim 7 goes above and beyond combining prior art elements according to the conventional methods to yield predictable results or simple substitution of one element for another to obtain predictable results.

Accordingly, Applicant respectfully submits that, for at least the above reasons, the combination of features in claim 7 would not have been obvious to a person having ordinary skill in the art in view of the cited references. Thus, claim 7 is patentable over the cited references, and claims 5, 6, and 8-10 are patentable at least by virtue of their dependence from claim 7. As noted above, claims 3, 4, 11, 12, 14, 15, and 17-20 have been cancelled.

Therefore, Applicant respectfully submits that one with ordinary skill in the art would not have combined the alleged references, and even if combined, the alleged combination does not teach or suggest (or render obvious) each and every feature of the claimed invention. Therefore, Applicant respectfully requests the Examiner to reconsider and withdraw the rejections of claims 3, 4, 6, 7, 9-12, 14, 15, and 17-20.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 5-10, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

Serial No. 10/581,306
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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

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Respectfully Submitted,

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